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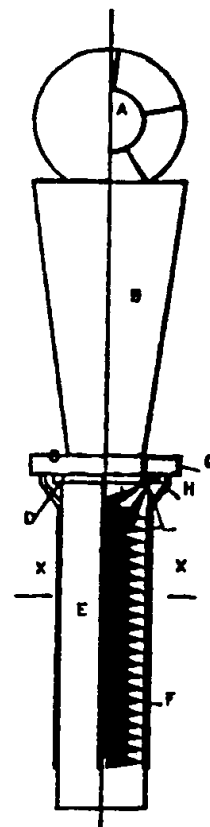
With international search report.

(54) Title: NEW MACHINERY FOR CASING AND MOISTENING TOBACCO

(57) Abstract

Object of this invention is a new machinery for casing and moistening not only leaves, strips or stems of tobacco but also cut tobacco, scraps, shorts, smalls and fines. The new machinery is characterised by the vertical passage of the tobacco through it; the machinery is essentially composed of a drum having its axis in a vertical or almost vertical position. During the casing process the tobacco is struck by jets composed of steam, casing fluids, air or other gas mixed all together or not. The jets, coming from the circumferences and the lateral surface of the drum, have been oriented differently so they produce a turbulence in the drum that cases the tobacco in a very homogeneous way and at the same time cleans the inside walls and prevents the production of tobacco balls or blocks; moreover there is a secondary advantage, in that the treated tobacco is thereby expanded and so there is an increase of the filling power of the tobacco. This invention reduces the production costs and improves its quality.

Sectional view K-K



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DESCRIPTION

New machinery for casing and moistening tobacco.

5 TECHNICAL FIELD

This invention is applicable to the production of tobacco blends used for making smoking and non smoking products and permits a reduction in production costs and improves the quality.

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BACKGROUND ART

Currently only whole tobacco leaves ,strips and stems are cased.

Presently the machinery used for casing whole tobacco leaves ,strips and stems
15 are :

- inclined drum , having its axis in an almost horizontal position ,whose inside walls are fitted with pins ,through which the tobacco crosses ,conveyed by the drum rotation around its axis. In addition there are spray nozzles which spray the casing on the tobacco ;
- 20 • screw conveyors fitted with jets on the inside to spray the casing ;
- vibrating or oscillating conveyors ,at the top , fitted with jets on the inside to spray the casing .

The casing is a sauce composed of water and a variety of ingredients such as sugar , humectants , and aromatic substances .It is used to improve the
25 organoleptic characteristics of tobacco or of the tobacco's aroma .

Strips are long pieces of threshed tobacco leaves, having dimensions $>1/8''$ which form a intermediate stage in the production of cut tobacco .

Stems are the veins of tobacco leaves ,not to be confused with the stalk of the plant.

30 In all these machines the tobacco crosses them horizontally and tends to stick to the inside walls of the machinery producing tobacco balls or blocks which have a

high, above average , moisture level that damage the next stages of the manufacturing process.

DISCLOSURE OF THE INVENTION

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This new machinery is for casing the tobacco .This invention reduces the production costs and improves its quality. In fact this new machinery permits the casing of not only whole leaves , strips or stems but also:

A. Scraps ,shorts ,smalls and fines;

10 B. cut tobacco ,coming from cutters in the manufacturing process of the tobacco leaves and stems.

Scraps ,shorts ,smalls and fines are broken pieces of tobacco leaves .They arise, as a result of the handling of tobacco ,of any variety ,type and grade, in farm building from selection , warehousing , stemming , packing , processing
15 machinery and from any other production process .They have a particle size of <20 and >50 US mesh . The cost of the scraps ,shorts , and fines are lower than the cost of the strips .

Presently the scraps ,shorts ,smalls and fines are used to produce homogenised tobacco because during the casing process they stick easily to the inside walls of
20 the machinery and increase the production of highly moistened tobacco balls or blocks that damage the next stages of the manufacturing process. For the same reasons the casing can't be sprayed on the cut tobacco .

By using scraps ,shorts ,smalls and fines it makes it possible to reduce the quantity of leaves and /or strips utilised in the blends thereby reducing the cost of
25 the tobacco blends employed for the production of smoking and non smoking products .

Spraying the casing on scraps ,shorts ,smalls and fines and/or cut tobacco improves its absorption because the surface of tobacco exposed to the casing is larger and so it is possible to reduce the quantity of casing sprayed and so the
30 costs of the manufacturing process .

During the process the tobacco crosses the machinery ,object of this invention , vertically so thereby reducing the tobacco's probabilities of sticking to the inside walls and producing tobacco balls or blocks ; moreover there is a secondary advantage , in that the tobacco treated is expanded thereby increasing its filling
5 power .

These and other advantages are achieved by the machinery which is the object of the present invention that is composed essentially of :

A. a static drum having its axis in a vertical or almost vertical position,

10 B. a set of holes or nozzles or other devices, having the same goal , placed around circumferences and lateral surface of the drum , which spray, inside the drum, jets of steam, casing fluid , air and /or other gases. All these fluids can be mixed all together or not . These jets , differently oriented, produce a turbulence that cases uniformly the tobacco and at the same time cleans and heats continually the inside walls of the drum. Being able to control the
15 pressure of the jets makes it possible to control the permanence of the tobacco in the drum .

The characteristics and the advantages of the invention are more evident in the preferred , but not exclusive, mode described for carrying out the device which is the object of this patent application ,which are described here below only by way
20 of indication and not limitation .

DESCRIPTION OF THE DRAWINGS

Figure 1:

- 25 A. air lock;
B. hopper
C. manifold for steam, casing and/or air and/or other gases ;
D. manifold for steam, casing and/or air and/or other gases;
E. drum;
30 F. piping system to inject steam, casing and air and/or other gases ;

- G. input steam, casing and/or air and/or other gases;
- H. input steam, casing and/or air and/or other gases;
- I. holes ;
- J. jets of steam , casing and/or air and/or other gases ;

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Fig.2 Sectional view X-X

- E. drum;
- F. piping system to inject steam, casing and air and/or other gases,
- J. jets of steam , casing and/or air and/or other gases ;

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Fig.3 Detail F

- F. piping system to inject steam, casing and air and/or other gases ;
- I. holes ;

15 **Fig.4 Sectional views Y-Y,W-W,Z-Z**

- F. piping system to inject steam, casing and air and/or other gases ;
- I. holes

Figure 5:

- 20 A. air lock;
- B. hopper
- C. manifold for steam, casing and/or air and/or other gases ;
- D. manifold for steam, casing and/or air and/or other gases;
- E. drum;
- 25 F. piping system to inject steam, casing and air and/or other gases ;

BEST MODE FOR CARRYING OUT THE INVENTION

In order to achieve the stated goals there is at least one mode for carrying out the
30 invention , which is described below because it is preferred but not binding .

A mode for carrying out the invention makes use of a machine as shown in fig. 1 that is suitable to case not only tobacco whole leaves or strips or stems, but also to case in a homogeneous way cut tobacco, scraps, shorts, smalls and fines and so thereby reducing the tobacco's probability of sticking to the inside walls and
5 producing tobacco balls or blocks; the entire device has been insulated to avoid heat dissipation.

The device is positioned vertically and the tobacco crosses the device in the same way. On the lateral surface of the drum "E", have been made elongated holes in which the pipes "F" have been welded. The manifold "C" feeds the casing and the
10 steam into the pipes "F"; the pipes "F" have holes through which "I" the casing is sprayed on the tobacco; the casing has been atomised by steam using an ejector. The pressure and the quantity of casing and the steam can be dosed by devices applied on the feeding system.

The tobacco is fed into the device by an air lock. The tobacco crosses the
15 hopper and is pushed into the drum by the jets of hot air that goes out from the holes "I" made on the manifold "D".

All the tobacco, crossing the machinery, goes out cased in a homogeneous way without production of balls and blocks; in fact the tobacco doesn't stick to the inside walls of the machinery that are always cleaned and heated during the
20 process by the steam jets.

By increasing the steam's pressure, the quantity of heat given to the tobacco rises and thus causes an expansion of the tobacco treated and an improvement of its filling power.

Other variants may be envisaged for carrying out the present invention, such as a
25 different way to feed continuously the tobacco or a different shape of the drum "E" or a different way to atomise and to spray the casing.

The steam is injected with a relative pressure between $98.07 \cdot 100$ and $98.07 \cdot 10000$ Pa (0.1 -10 at); the air and/or other gases are injected with a relative pressure between $98.07 \cdot 100$ and $98.07 \cdot 10000$ Pa (0.1 -10 at) and a
30 temperature between 10 and 150 °C; the casing is injected with a relative pressure between $98.07 \cdot 100$ and $98.07 \cdot 10000$ Pa (0.1 -10 at) and a temperature

between 10 and 150 °C .The tobacco can cross the pipe in a period between 0.01 and 10 sec .

The conceived invention is susceptible to modification and/or variants ,all falling within the invention concept ;moreover ,all the details, sizes and materials could
5 be replaced by others , which are technically equivalent .

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CLAIMS

- 5 1. New machinery for casing leaves , strips, stems, cut tobacco , scraps , shorts , smalls and fines of tobacco in which the tobacco vertically crosses the machinery , the machinery, object of this present invention is characterised essentially by :
- 10 a) a static drum having its axis in a vertical or in a almost position
- b) a set of holes or nozzles or other devices , having the same goal, placed around the upper and lower circumferences of the drum and/or inside their surface and around the lateral surface of the drum
- 15 c) the set of holes or nozzles or other devices, described in b) , spray jets of steam , casing fluid , air and /or other gases inside the drum, all these fluids can be mixed together or not, these jets , differently oriented , produce a turbulence that allows the casing to be sprayed uniformly on the tobacco and at the same time they continuously clean and heat the inside walls of the drum
- 20 d) by regulating the pressure of the fluids at the input it is possible to control the permanence of tobacco in the drum ;
2. machinery as described in claim 1 for moistening leaves , strips, stems, cut tobacco , scraps , shorts , smalls and fines of tobacco ;
- 25 3. machinery as described in claim 1 in which the tobacco is fed continuously by an air lock or other similar devices so the entrance of air into the drum is nearly impossible or at least limited ;

4. machinery as described in claim 2 in which the tobacco is fed continuously by an air lock or other similar device so the entrance of air in the drum is nearly impossible or at least limited ;
- 5 5. machinery as described in claim 3 in which there is a secondary advantage, in that the tobacco treated is expanded thereby increasing its filling power ;
6. machinery as described in claim 4 in which there is a secondary advantage
10 in that the tobacco treated is expanded thereby increasing its filling power ;
7. machinery as described in claim 1 in which the drum can oscillate around its vertical axis ;
15
8. machinery as described in claim 2 in which the drum can oscillate around its vertical axis ;
9. machinery as described in claim 3 in which the drum can oscillate around
20 its vertical axis;
10. machinery as described in claim 4 in which the drum can oscillate around its vertical axis ;
- 25 11. machinery as described in claim 5 in which the drum can oscillate around its vertical axis;
12. machinery as described in claim 6 in which the drum can oscillate around its vertical axis .
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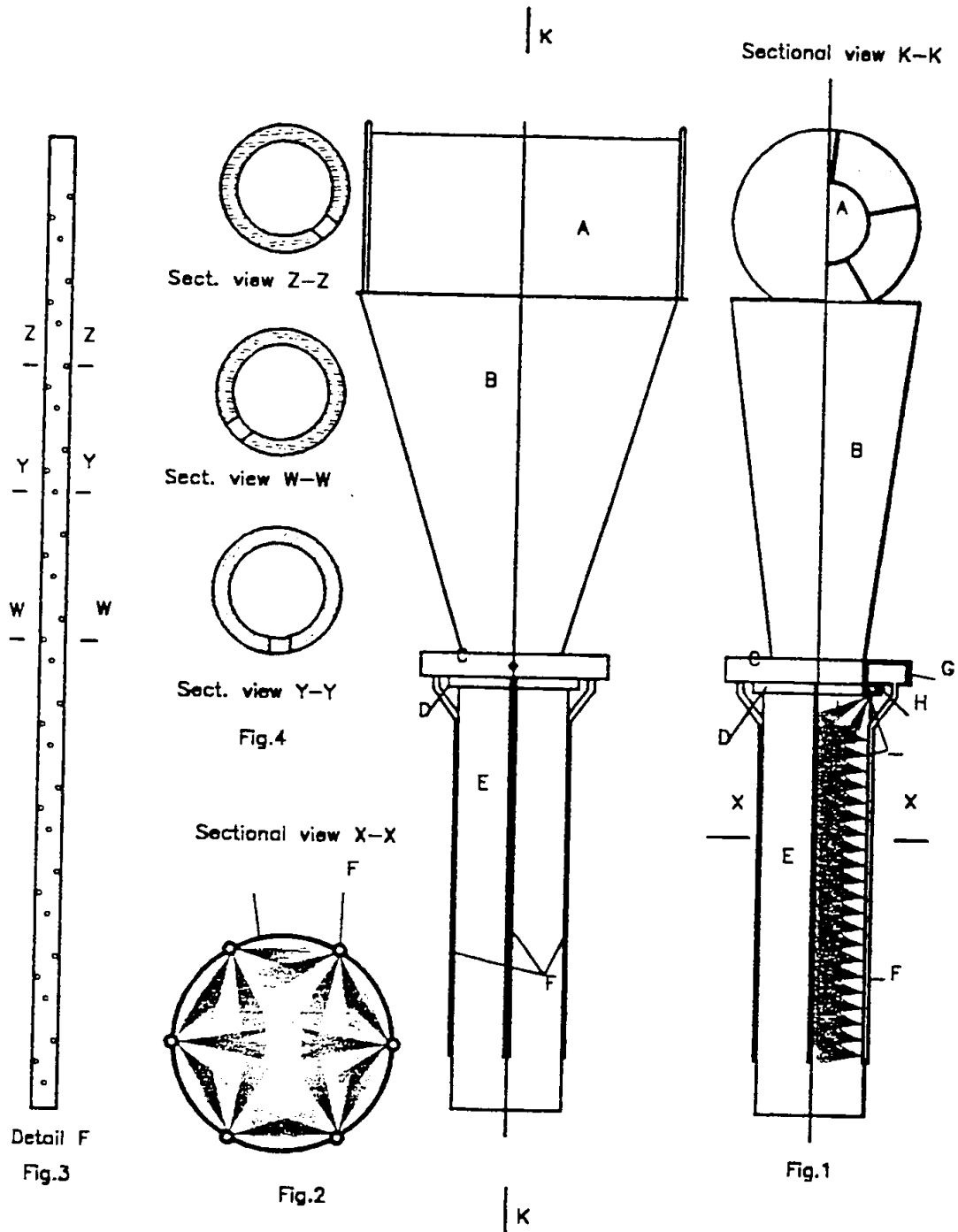


Fig.5

INTERNATIONAL SEARCH REPORT

Int. l. Application No

PCT/IT 98/00309

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 6 A24B3/04 A24B3/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A24B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 438 775 A (MAYS CHARLES D ET AL) 27 March 1984	1-4
Y	see column 2, line 12 - line 21; figures 1,4	7-12

X	US 3 742 961 A (WALLER C) 3 July 1973	1-4
Y	see column 1, line 32 - line 34; figure 1	7-12

Y	US 3 879 857 A (NEVILLE RICHARD ERNEST GARTSID) 29 April 1975 see figure 1	7-12

A	US 4 148 325 A (SOLOMON GRAEME R ET AL) 10 April 1979 see figure 1	1-4

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/IT 98/00309

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